

International Standard Valve, Inc.

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Three Piece Forged Trunnion Mounted Ball Valve



2" through 56"

ASME Class 150 - 1500

Bolted or Welded Body

Flanged & Weld Ends

API 6D

Fire Safe

NACE

CE

QUALITY MANAGEMENT SYSTEM

CERTIFIED BY DNV

ISO 9001:2008



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ISV offers bolted & welded body designed trunnion mounted pipeline style ball valves specifically suited to meet the demands of the oil & natural gas pipeline, gas utility and related industries. ISV's pipeline style ball valves are manufactured in strict accordance to ISO 9001 and API Q1 quality standards with design criteria to API 6D, API 608, ASME B16.34 and applicable industry standards.

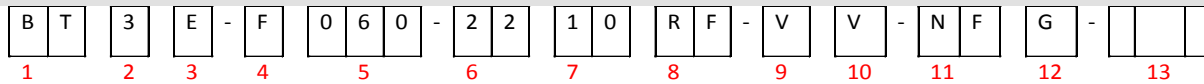
Design Standards and Specifications of products in this bulletin:

API 6D/ISO 14313 – Specification for pipeline valves
 API 607/ISO 10497 – Fire test for soft seated valves
 API 6FA – Specification for Fire Test for Valves
 API Q1 – Specification for quality programs...
 API 608 – Metal Ball Valves
 ASME B16.5 – Steel pipe flanges and fittings
 ASME B16.10 – Face to Face & end to end dim.

ASME B16.34 – Steel valves-flanged and butt-weld end
 ASME B31.1 - Power piping
 ASME B31.3 – Process piping
 ASME B31.4 – Pipeline transportation systems...
 ASME B31.8 – Gas transmission and distribution piping syst.
 NACE MR-01-75 / ISO 15156 – Petroleum and natural gas industries-Materials for use in H2S containing environments in oil and gas production.

Specifying ISV Three Piece Trunnion Ball Valves Example: ISV figure number BT3E-F060-2210RF-VV-NFG

Describes an ASME class 600, 3 piece bolted body design, full port, trunnion supported ball valve, raised face flange ends, with LF2 body material, carbon steel + Electroless Nickel Plated trim, viton seats inserts, viton seals, gear operated, meets NACE and is fire safe tested.



1. Valve Type 2. Service /Design Style 3. Body Design 4. Bore 5. Pressure Rating 6. Body Material

Code	Description	Code	Description	Code	Description	Code	Description	Code	Class	Code	Description
BT	Ball Valve Trunnion	1	Adjustable Packing Flanged (API 608, ASME B16.34)	B	2 pc Split- Bolted	R	Reduced	015	Class 150	11	A105N
BF	Ball Valve Floating	3	O-Ring Stem Seal	E	3 pc Bolted	F	Full	030	Class 300	21	A105N/LF2
		4	Metal Seated Valve	G	3 pc Welded	S	Standard Port	040	Class 400	22	LF2
		5	Weld Overlay Body	H	Top Entry			060	Class 600	30	S.S.
		7	Cryogenic Service	K	Tandem			090	Class 900	36	316SS
				L	Double Ball			150	Class 1500	92	CS+ SS Seat Pocket
				M	Compact Design			250	Class 2500		
								450	Class 4500		

7. Trim Material 8. End Connections 9. Seat 10. Seal 11. Features 12. Operator

Code	Description	Code	Description	Code	Description	Code	Description	Code	Description	Code	Description
10	C.S. + ENP	RF	Flg—RF	N	Nylon	V	Viton	NF	NACE compliant, Fire Safe	L	Locking Lever
30	Stainless Steel	RJ	Flg—RTJ	T	PTFE	H	HNBR		Tested	B	Bare Stem
		FF	Flg—FF	D	Devlon	L	Low Temp. (-50 F.) O-Ring	NW	NACE compliant, Non-Fire	A	Actuated
36	316SS / CF8M	WW	WE x WE	H	HNBR	K	Kel-F		Tested Without NACE, Fire Safe	G	Manual Gear
61	410 SS	WF	RF x WE	R	R-PTFE	G	Graphite	WF	Tested Without NACE, Fire Safe	H	Non-locking Lever
		WJ	RTJ x WE	C	TFM 4215	T	PTFE	WW	Tested Without NACE Non-Fire Tested	C	Chain Wheel
				K	Kel-F	M	TFM			O	Oval Hand wheel
				E	EPDM	E	EPDM			S	Spring Return Lever
				V	Viton	8	PEEK-LIP SEAL				
				1	Tung. Carb.	9	PTFE-LIP SEAL				
				2	Cr. Carbide						

13. Modifier Code

Code	Description
xxx	Special configurations.

Bolted & welded body MSA trunnion ball valve photos



Design Standards	
	API 6D, API 608
Basic Design	ASME B16.34
Face to Face Dimension	ASME B16.10
	API 6D
Flanged Ends	ASME B16.5
Pressure Test	API 6D

Product Certifications
API 6D
API 607
PED CE



Bolted Body, Weld x Weld ends
BT3E



Welded Body, Weld x Weld ends
BT3G



Bolted Body, Flanged x Weld ends
BT3E

STANDARD FEATURES:

- Locking Device
- Forged 3 Piece Body
- Self Lubricating Bearings
- Double Block and Bleed capability
- Secondary sealant injection system
- Actuator mounting pad
- Solid Forged Ball
- Anti Blow-Out Stem
- Anti static ball-stem design
- Fire-tested to API 607
- Metal Lip for Fire-Safe & Secondary Sealing
- Static Secondary Body Graphite Fire-Safe Seals

Class	PRODUCTION RANGE: ISV Series BT3E & BT3G														Size (inches)						
	2	3	4	6	8	10	12	14	16	18	20	22	24	26	30	34	36	42	44	48	56
Class 150	Bolted Body																				
	Welded Body																				
Class 300	Bolted Body																				
	Welded Body																				
Class 600	Bolted Body																				
	Welded Body																				
Class 900	Bolted Body																				
	Welded Body																				
Class 1500	Bolted Body																				
	Welded Body																				

The **ISV by MSA Series 3 Piece Trunnion mounted ball valves** are a product of the Czech Republic.

MSA a.s. is one of Europe's largest manufacturers of industrial valves for use in the transportation and processing of oil, gas, for power generation, heat and water distribution. MSA's superior product designs, long service history and strong quality commitment enhances ISV's ability to deliver high value to discerning users world-wide.

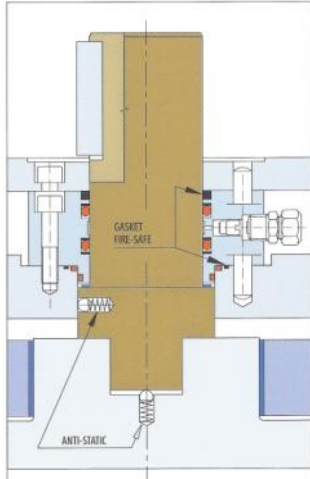


STANDARD MATERIAL OPTIONS

BODY & CLOSURE	BALL	STEM	SEAT	SEALS
A105/LF2 A105N LF2 F316SS Duplex SS C.S.+ SS overlay C.S. + Inconel	C.S.+ENP F316SS 17-4pH C.S.+Tungsten Carbide	C.S.+ENP F316SS 17-4pH Duplex SS	Viton HNBR PEEK PTFE Nylon Devlon	Viton HNBR PTFE-Lip Seal



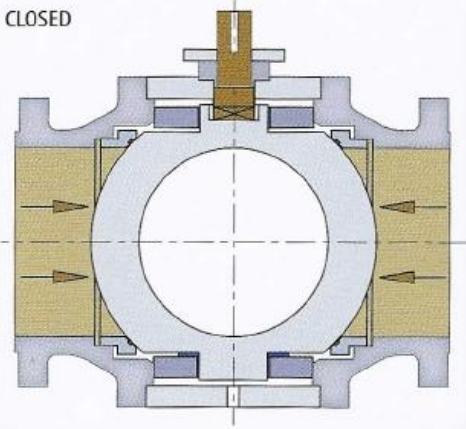
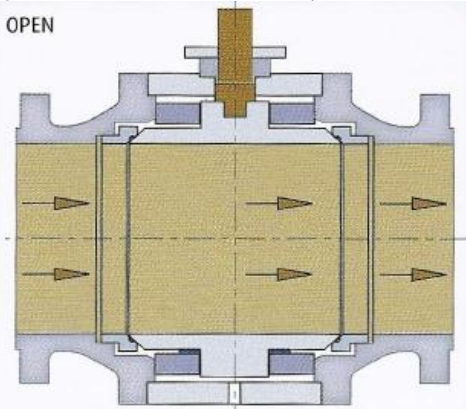
DESIGN DETAILS



Stem Design:

Stem is anti blow-out design. Primary and secondary stem sealing is achieved by two independent rings.

Injection port is provided for grease injection for emergency sealing in case of stem seal damage.



Double Block and Bleed (DBB) :

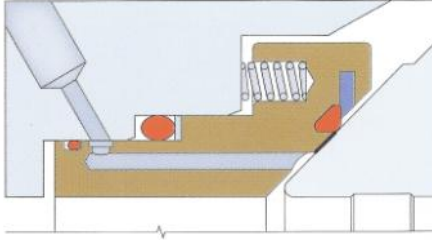
Ball valves are supplied with DBB feature.

This feature enables the use of a single valve with two independently functioning seats on each end of the valve while allowing the cavity between the seating surfaces to be vented or bled.



Trunnion assembly at MSA

DESIGN DETAILS



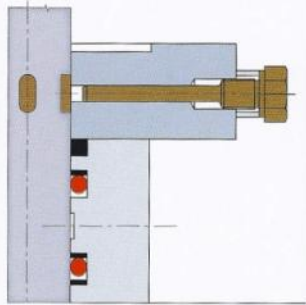
Seat: Polymeric or elastomeric seat design

Spring loaded seats ensure tight seal at low differential pressure by pushing the seat towards the ball. The unique seat design controls the amount of seat force against the ball to achieve a tight seat seal at optimum valve operating torque.

Metal seat ring with elastomeric insert is used for reliable bubble-tight gas service applications. The elastomeric seat inserts are delta shaped and normally provided as HNBR, Viton or as requested.

Metal seats with elastomeric delta seat inserts have Double Piston Effect feature (DPE). DPE or "double isolation" feature enables the downstream side seat seal to remain tight if the upstream seat is damaged.

Polymeric seat insert designs including PTFE, Nylon, PEEK are the preferred seat design option for liquid services & class 900 and higher applications.



Position adjustment (Bare Stem):

Bare stem valves are equipped with a unique ball open and close positioning device at the stem. This feature enables precise ball positioning when installing or removing actuators on ISV by MSA ball valves even while the valve is installed in the pipeline.



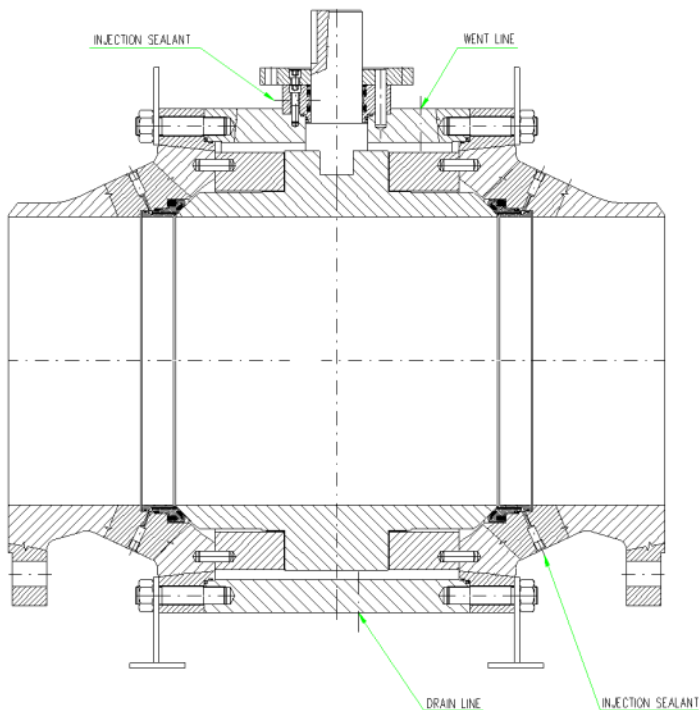
Test room



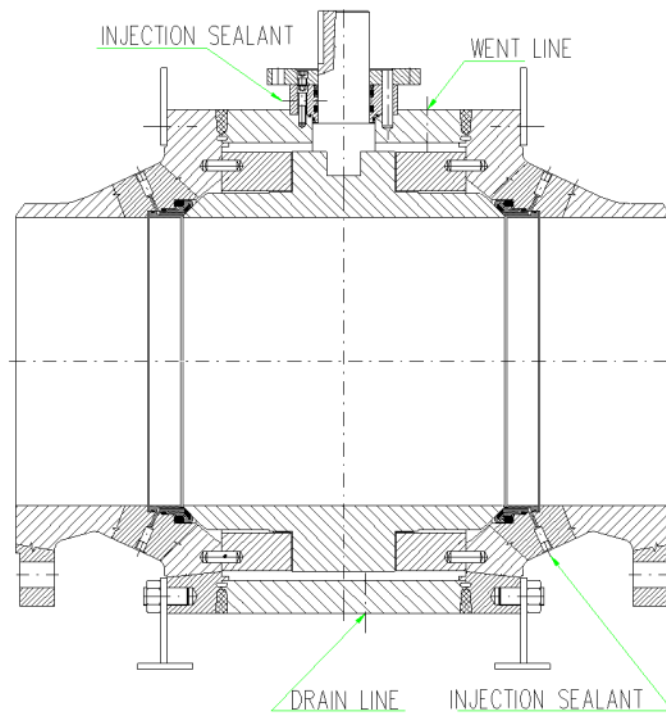
Ball Machine

Photos at MSA

Bolted Body (Typical) BT3E

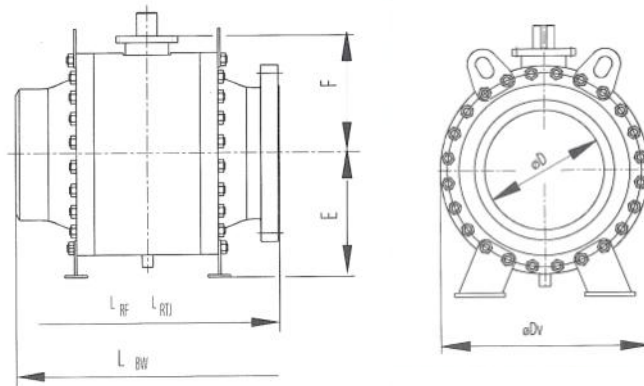


Welded Body (Typical) BT3G



ISV Series BT3E-F & BT3G-F (Full Port) weights and dimensions

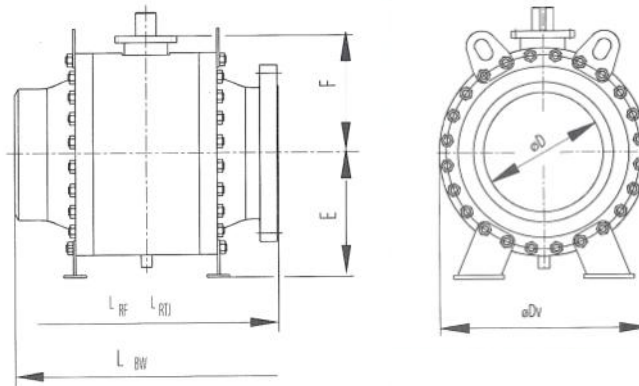
Class 150 Dimensions (inches)									Weights	
NPS	DN	D	LBW	LRF	LRTJ	Dv	E	F	BW	RF, RTJ
2"	50	1.93	8.50	7.01	7.52	6.89	3.66	4.65	46.30	59.52
3"	80	2.91	11.14	7.99	8.50	7.87	4.25	5.24	88.18	99.21
4"	100	3.94	12.01	9.02	9.49	9.45	5.04	8.27	127.87	152.12
6"	150	5.98	17.99	15.51	15.98	12.99	9.09	9.65	319.67	374.79
8"	200	7.99	20.51	17.99	18.50	15.94	10.91	11.34	540.13	595.25
10"	250	10.00	22.01	20.98	21.50	18.86	12.20	13.03	705.48	780.44
12"	300	12.01	25.00	24.02	24.49	21.61	13.54	14.49	1234.59	1344.82
14"	350	13.27	30.00	27.01	27.52	23.54	14.57	15.47	1895.97	2039.27
16"	400	15.24	32.99	30.00	30.51	27.09	16.34	17.20	2283.99	2658.77
18"	450	17.24	35.98	34.02	34.49	29.92	17.83	18.50	2910.10	3395.11
20"	500	19.25	39.02	35.98	36.50	33.15	19.33	20.28	3875.72	4038.86
22"	550	21.26	42.01	39.02	39.49	36.61	21.46	22.05	4739.93	5180.86
24"	600	23.27	45.00	42.01	42.52	39.17	23.54	23.82	6305.21	6547.72
26"	650	25.00	49.02	45.00	-	41.14	24.49	24.88	7539.80	8046.86
28"	700	27.01	52.99	49.02	-	45.28	26.57	26.89	9369.64	9993.54
30"	750	29.02	55.00	50.98	-	48.27	28.07	28.39	11023.10	11699.92
32"	800	30.75	60.00	54.02	-	52.17	30.04	30.51	12434.06	13426.14
34"	850	32.36	64.02	57.99	-	55.71	31.81	33.07	14153.66	15145.74
36"	900	34.49	67.99	60.00	-	57.80	32.83	33.43	17725.14	18882.57
40"	100	38.50	70.08	72.83	-	63.62	36.54	37.13	22619.40	23968.63
42"	1050	40.24	72.44	74.80	-	66.54	37.99	39.84	29982.83	31966.99
44"	1100	42.32	74.80	76.77	-	70.16	39.76	40.39	32628.38	34943.23
48"	1200	45.98	82.68	85.83	-	75.67	41.77	43.19	37037.62	39242.24
56"	1400	53.62	88.58	90.55	-	88.58	48.50	49.92	59976.69	59976.69



Class 300 Dimensions (inches)									Weights	
NPS	DN	D	LBW	LRF	LRTJ	Dv	E	F	BW	RF, RTJ
2"	50	1.93	8.50	8.50	9.13	6.89	3.66	4.65	48.50	61.73
3"	80	2.91	11.14	11.14	11.73	8.27	4.45	5.24	90.39	121.25
4"	100	3.94	12.01	12.01	12.64	9.65	5.12	8.86	130.07	171.96
6"	150	5.98	17.99	16.50	15.87	12.99	9.09	9.65	319.67	392.42
8"	200	7.99	20.51	19.76	20.39	15.94	10.91	11.34	540.13	645.95
10"	250	10.00	22.01	22.36	22.99	18.86	12.20	13.03	705.48	864.21
12"	300	12.01	25.00	25.51	26.14	21.61	13.54	14.49	1234.59	1455.05
14"	350	13.27	30.00	30.00	30.63	23.54	14.57	15.47	1895.97	2182.57
16"	400	15.24	32.99	32.99	33.62	27.09	16.34	17.20	2283.99	2835.14
18"	450	17.24	35.98	35.98	36.61	29.92	17.83	18.50	2910.10	3615.58
20"	500	19.25	39.02	39.02	39.76	33.15	19.33	20.28	3875.72	4250.51
22"	550	21.26	42.99	42.99	43.86	36.61	21.46	22.05	4828.12	5401.32
24"	600	23.27	45.00	45.00	45.87	39.17	23.54	23.82	6305.21	6746.14
26"	650	25.00	49.02	49.02	50.00	41.14	24.49	24.88	7716.17	8421.64
28"	700	27.01	52.99	52.99	54.02	45.28	26.57	26.89	9369.64	10615.25
30"	750	29.02	55.00	55.00	55.98	48.27	28.07	28.39	11023.10	12334.85
32"	800	30.75	60.00	60.00	61.14	52.17	30.04	30.51	12434.06	14175.71
34"	850	32.36	64.02	64.02	65.12	55.71	31.81	33.07	14153.66	15542.57
36"	900	34.49	67.99	67.99	69.13	57.80	32.83	33.43	17725.14	19766.62
40"	100	38.50	70.08	72.83	-	63.62	36.54	37.13	22619.40	24008.31
42"	1050	40.24	72.44	74.80	-	66.54	37.99	39.84	29982.83	31966.99
44"	1100	42.32	74.80	76.77	-	70.16	39.76	40.39	32628.38	35384.15
48"	1200	45.98	82.68	85.83	-	75.67	41.77	43.19	37037.62	39506.79
56"	1400	53.62	88.58	90.55	-	88.58	48.50	49.92	59702.83	60208.17

ISV Series BT3E-F& BT3G-F (Full Port) weights and dimensions

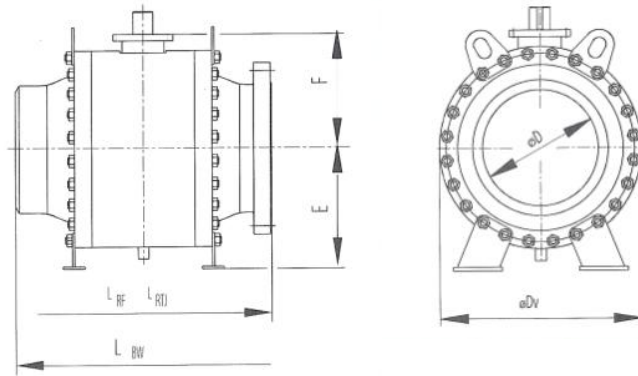
Class 600 Dimensions (inches)									Weights	
NPS	DN	D	LBW	LRF	LRTJ	Dv	E	F	BW	RF, RTJ
2"	50	1.93	11.50	11.50	11.61	6.89	3.66	4.92	55.12	68.34
3"	80	2.91	14.02	14.02	14.13	8.27	4.45	5.83	116.84	171.96
4"	100	3.94	17.01	17.01	17.13	9.65	5.12	7.87	156.53	220.46
6"	150	5.98	22.01	22.01	22.13	12.99	9.33	9.80	335.10	458.56
8"	200	7.99	25.98	25.98	26.14	16.26	10.91	11.69	650.36	833.35
10"	250	10.00	30.98	30.98	31.14	19.21	12.36	13.27	925.94	1234.59
12"	300	12.01	32.99	32.99	33.11	22.40	13.98	14.88	1461.66	1816.61
14"	350	13.27	35.00	35.00	35.12	24.45	15.00	15.75	2034.86	2380.99
16"	400	15.24	39.02	39.02	39.13	28.07	16.81	17.64	3161.43	3778.72
18"	450	17.24	42.99	42.99	43.11	30.51	18.11	19.37	4034.45	4673.79
20"	500	19.25	47.01	47.01	47.24	34.17	19.69	21.18	4960.40	5873.11
22"	550	21.26	50.98	50.98	51.38	37.64	21.97	22.95	6084.75	7165.02
24"	600	23.27	55.00	55.00	55.39	40.55	24.21	24.21	7826.40	9021.31
26"	650	25.00	57.01	57.01	57.52	42.52	25.20	25.59	9832.61	11353.79
28"	700	27.01	60.98	60.98	61.50	46.46	26.57	27.17	11949.04	12786.80
30"	750	29.02	65.00	65.00	65.51	49.80	28.86	29.49	14219.80	15615.32
32"	800	30.75	70.00	70.00	70.63	53.74	30.83	32.09	18364.48	20143.61
34"	850	32.76	75.98	75.98	76.61	57.48	32.68	33.98	21715.51	24581.51
36"	900	34.49	82.01	82.01	82.64	59.45	35.63	35.12	23567.39	25461.16
40"	100	38.50	74.80	78.74	-	64.96	37.13	37.60	29123.03	31647.32
42"	1050	40.24	76.77	82.68	-	67.91	38.66	39.88	33576.36	37423.42
44"	1100	42.32	80.71	86.61	-	71.65	40.55	41.73	37699.00	40895.70
48"	1200	45.98	85.83	94.49	-	77.56	43.50	44.69	45856.10	50684.21
56"	1400	53.62	93.90	-	-	89.57	49.37	50.79	70106.92	-



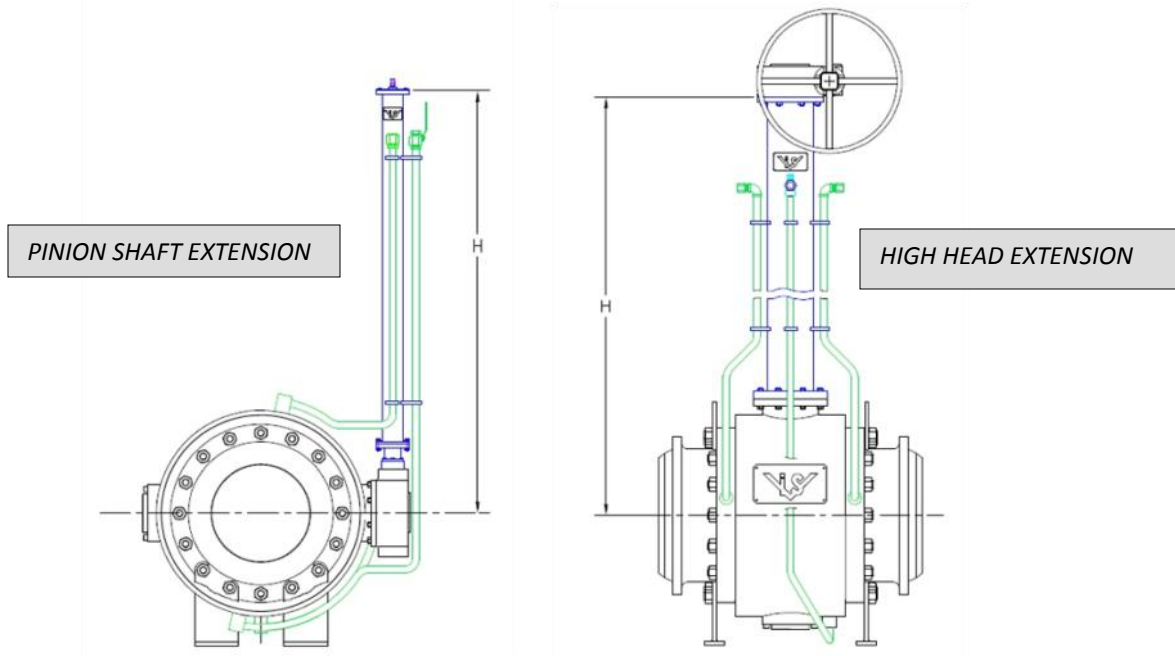
Class 900 Dimensions (inches)									Weights	
NPS	DN	D	LBW	LRF	LRTJ	Dv	E	F	BW	RF, RTJ
2"	50	1.93	14.49	14.49	14.61	7.48	4.02	5.31	88.18	138.89
3"	80	2.91	15.00	15.00	15.12	8.66	4.45	5.83	152.12	182.98
4"	100	3.94	17.99	17.99	18.11	9.65	5.12	8.86	308.65	346.13
6"	150	5.98	24.02	24.02	24.13	13.19	11.34	10.04	507.06	630.52
8"	200	7.99	29.02	29.02	29.13	16.73	13.11	11.61	760.59	970.03
10"	250	10.00	32.99	32.99	33.11	20.16	14.80	14.06	1234.59	1587.33
12"	300	12.01	37.99	37.99	38.11	23.54	16.50	15.20	1697.56	2182.57
14"	350	12.76	40.51	40.51	40.87	26.18	17.83	16.54	2094.39	2689.64
16"	400	14.76	44.49	44.49	44.88	28.90	19.17	18.54	2535.31	3549.44
18"	450	16.73	47.99	47.99	48.50	31.81	20.63	20.04	4717.89	5732.01
20"	500	18.62	52.01	52.01	52.52	35.00	22.24	21.54	6305.21	7672.08
22"	550	20.63	55.98	55.98	56.73	38.58	24.61	23.39	7892.54	9590.10
24"	600	22.52	60.98	60.98	61.73	42.09	26.38	25.35	9501.91	11530.16
26"	650	24.37	61.81	62.99	63.86	45.20	27.91	26.97	11419.93	13999.34
28"	700	26.26	62.99	62.99	66.22	48.11	29.37	29.80	13293.86	16248.05
30"	750	28.11	65.35	69.29	70.16	51.26	30.94	31.42	15961.45	19510.89
32"	800	30.00	69.29	72.83	73.70	54.65	32.64	32.91	18673.13	22707.59
34"	850	31.89	72.83	76.77	77.95	58.07	34.37	34.65	23214.65	28153.00
36"	900	33.74	74.80	80.71	81.89	60.94	36.38	36.14	27425.47	33179.53
40"	1000	37.56	82.68	85.83	-	67.91	39.88	39.65	33598.41	40961.84
42"	1050	39.37	85.83	88.58	-	68.90	40.35	40.08	44235.70	52899.86
44"	1100	41.26	88.58	93.70	-	78.54	41.26	45.28	48104.81	57694.91
48"	1200	45.00	93.70	96.46	-	83.46	47.64	47.72	56724.87	68784.14

ISV BT3E-F & BT3G-F (Full Port) weights and dimensions

Class 1500		Dimensions (inches)							Weights	
NPS	DN	D	LBW	LRF	LRTJ	Dv	E	F	BW	RF, RTJ
2"	50	1.93	14.49	14.49	14.61	7.48	4.02	5.31	114.64	218.26
3"	80	2.91	18.50	18.50	18.62	9.06	4.92	6.22	194.01	253.53
4"	100	3.94	21.50	21.50	21.61	11.22	5.98	7.99	352.74	396.83
6"	150	5.75	27.76	27.76	27.99	16.73	13.11	11.81	727.52	881.85
8"	200	7.64	32.76	32.76	33.11	21.10	15.28	13.78	1355.84	1620.40
10"	250	9.49	39.02	39.02	39.37	25.67	17.56	16.81	2039.27	2469.17
12"	300	11.38	44.49	44.49	45.12	30.16	19.80	18.50	2866.01	3417.16
14"	350	12.52	49.49	49.49	50.24	34.17	22.40	20.55	3527.39	4221.85
16"	400	14.25	54.49	54.49	55.39	38.90	24.76	23.54	4299.01	5180.86
18"	450	16.02	60.51	60.51	61.38	42.91	26.77	25.59	6062.71	7275.25
20"	500	17.87	65.51	65.51	66.38	46.46	28.54	27.24	8190.16	9821.58
22"	550	19.69	66.61	66.61	67.76	51.97	30.91	30.08	10196.37	12224.62
24"	600	21.42	76.50	76.50	77.64	55.71	33.78	32.17	12213.59	14682.77
26"	650	23.23	81.50	81.50	83.62	60.43	36.14	34.57	15432.34	18651.09
28"	700	25.00	86.54	86.54	88.62	64.76	38.31	38.15	17681.05	21274.58
30"	750	26.77	90.55	90.55	-	68.31	40.08	39.96	21362.77	25617.68
32"	800	28.54	94.49	94.49	-	73.43	42.64	42.32	24250.82	29145.08
34"	850	30.35	100.39	100.39	-	77.95	44.88	44.61	29762.37	35714.84
36"	900	32.13	106.30	106.30	-	82.28	47.05	46.85	35053.46	41623.23



Customer specific external coating systems, High-Head or Pinion Shaft extensions for below ground service and pipe pups are available. Please specify pipe pup length and extension length (H-dimension) at time of order.



ISV — Houston, Texas



OTHER ISV PRODUCTS



***Cast Trunnion & High Pressure
Ball valves 1" – 12"***



***API 6D Check & Cryogenic
Trunnion mounted ball valve***



Oil & Gas Floating Ball valves 1/4" – 12"

Industrial Floating Ball valves 1/4" – 12"





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